Contents

Publisher's note v
Preface ix
Organizers and Sponsors xi
Committees xii

Bridges

Methods of wind response investigation employed for the Kap Shui Mun Bridge
R.H. Scanlan (Baltimore, USA), S.L. Stroh (Tampa, USA), J.D. Raggett (Carmel, USA) 1
Analysis of experimental data from wind-induced response of a long span bridge
J.M.W. Brownjohn (Bristol, UK), A. Zasso (Milan, Italy), G.A. Stephen, R.T. Severn (Bristol, UK) 13
Aerodynamic stability of self-anchored double deck suspension bridge
S.D. Kwon, S.P. Chang, Y.S. Kim, S.Y. Park (Seoul, South Korea) 25
Damping effects of cable cross ties in cable-stayed bridges
H. Yamaguchi, H.D. Nagahawatta (Saitama, Japan) 35
The effect of section model details on aeroelastic parameters
N.P. Jones, R.H. Scanlan (Baltimore, USA), P.P. Sarkar (Lubbock, USA), L. Singh (Baltimore, USA) 45
Identification of flutter derivatives of bridge deck from free vibration data
M. Iwamoto (Nagoya, Japan), Y. Fujino (Tokyo, Japan) 55
Wind resistant design of long span suspension bridges
K. Kazama, H. Yamada, T. Miyata (Yokohama, Japan) 65
Stochastic stability of wind excited structures
Y.K. Lin, Q.C. Li (Boca Raton, USA) 75
Study on buffeting response spectrum method for long span bridges
W. Chen, M. Gu, H.F. Xiang (Shanghai, China) 83
System-identification procedure for system and input parameters in ambient vibration surveys
N.P. Jones, T. Shi, J.H. Ellis, R.H. Scanlan (Baltimore, USA) 91
Comparisons between wind tunnel tests on a full aeroelastic model of the proposed bridge over Stretto di Messina and numerical results
G. Diana, M. Falco, S. Bruni, A. Cigada (Milan, Italy), G.L. Larose, A. Damsgaard (Lyngby, Denmark), A. Collina (Milan, Italy) 101

Tall buildings and towers

Simulation method of simultaneous time-series of multi-local wind forces on tall buildings by using dynamic balance data

T. Ohkuma (Yokohama, Japan), H. Marukawa, K. Yoshie (Tokyo, Japan), H. Niwa (Yokohama, Japan), T. Teramoto, H. Kitamura (Tokyo, Japan) . 115
Effect of angle of attack on vortex induced vibration and galloping of tall buildings in smooth and turbulent boundary layer flows
H. Kawai (Saitama, Japan) 125
Dynamic characteristics and wind induced response of a steel frame tower
M.J. Glanville, K.C.S. Kwok (Sydney, Australia) 133

Wind characteristics

A wind tunnel/full-scale comparison of the wind flow over Auckland City
R.G.J. Flay, R.J. Andrews (Auckland, New Zealand) 151
SODAR – A useful remote sounder to measure wind and turbulence
S. Vogt, P. Thomas (Karlsruhe, Germany) 163
Experimental and numerical simulation of flow around two-dimensional hills
A.D. Ferreira, A.M.G. Lopes, D.X. Viegas (Coimbra, Portugal), A.C.M. Sousa (Fredericton, Canada) 173
Analysis of peak gust versus fastest-mile wind statistics
R.E. Peterson, S.D. Goldstein, K.C. Mehta (Lubbock, USA) 183

Bluff body aerodynamics

On turbulent vortex shedding flow past 2D square cylinder predicted by CFD [1]
S. Murakami, A. Mochida (Tokyo, Japan) 191
Interference between wind loading on group of structures [1]
T.F. Sun, Z.F. Gu (Beijing, China) 213
Aerodynamic behavior of multiple elastic circular cylinders with vicinity arrangement
Y. Kubo (Kitakyushu, Japan), T. Nakahara (Osaka, Japan), K. Kato (Kitakyushu, Japan) 227
Numerical study of pressure fluctuations on a rectangular cylinder in aerodynamic oscillation
T. Tamura, Y. Itoh, A. Wada (Yokohama, Japan), K. Kuwahara (Kanagawa, Japan) 239
Wind-induced oscillations of groups of bridge stay-cables
T. Yoshimura (Fukuoka, Japan), M.G. Savage, H. Tanaka (Ottawa, Canada), D. Urano (Fukuoka, Japan) 251
Flow characteristics around two parallel adjacent square cylinders of different sizes
P.T.Y. Wong, N.W.M. Ko, A.Y.W. Chiu (Hong Kong, Hong Kong) 263

[1] Keynote/Invited paper.

Flow interaction behind two circular cylinders of equal diameter – a numerical study
C.W. Ng, N.W.M. Ko (Hong Kong, Hong Kong) 277
Mechanism of interference galloping of two identical circular cylinders in cross flow
B. Dielen, H. Ruscheweyh (Aachen, Germany) 289
Effects of aspect ratio and surface roughness on the time-averaged aerodynamic forces on cantilevered circular cylinders at high Reynolds numbers
Y. Uematsu, M. Yamada (Sendai, Japan) 301
An experimental investigation of the effects of free-stream turbulence on streamwise surface pressures in separated and reattaching flows
Q.S. Li, W.H. Melbourne (Clayton, Australia) 313

Roofs and low rise

The response of large roofs to wind action [1]
W.H. Melbourne (Clayton, Australia) 325
Pressure factors for edge regions on low rise building roofs
J.D. Ginger (Lubbock, USA), C.W. Letchford (Brisbane, Australia) 337
Generation of wind loads on a horizontal grandstand roof of large aspect ratio
K.M. Lam, A.P. To (Hong Kong, Hong Kong) 345
The effect of directional variations on the observed mean and rms pressure coefficients
P.J. Richards (Auckland, New Zealand), R.P. Hoxey (Bedford, UK), B.S. Wanigaratne (Auckland, New Zealand) 359
Proper orthogonal decomposition and reconstruction of multi-channel roof pressure
B. Bienkiewicz (Fort Collins, USA), Y. Tamura (Kanagawa, Japan), H.J. Ham (Fort Collins, USA), H. Ueda, K. Hibi (Tokyo, Japan) 369
Wind loads on low rise buildings – A review [1]
P. Krishna (Roorkee, India) 383

Dampers and active control

Wind tunnel investigation of active vibration control of tall buildings
R.J. Facioni, K.C.S. Kwok, B. Samali (Sydney, Australia) 397
Design aspects of tuned mass dampers for the Great Belt East Bridge approach spans
A. Larsen (Lyngby, Denmark), E. Svensson (Copenhagen, Denmark), H. Andersen (Lyngby, Denmark) 413

[1] Keynote/Invited paper.

Modelling of tuned mass dampers for wind tunnel tests on a full-bridge aeroelastic model
G.L. Larose, A. Larsen (Lyngby, Denmark), E. Svensson (Copenhagen, Denmark) 427

Wind tunnel techniques

Progress in physical modelling for wind engineering [1]
J.E. Cermak (Fort Collins, USA) 439
A new force balance data analysis method for wind response predictions of tall buildings
D.Y.N. Yip (London, Canada), R.G.J. Flay (Auckland, New Zealand) 457
Physical modelling of natural wind and its guide in a large open pit mine
X. Peng, G.R. Lu (Wuhan, China) 473
Design of a low-cost stratified boundary-layer wind tunnel
M. Schatzmann, J. Donat, S. Hendel, G. Krishan (Hamburg, Germany) .. 483
Computer-controlled wind tunnel for wind-engineering applications
A. Nishi, H. Miyagi (Miyazaki, Japan) 493
Wind-tunnel modelling of the atmospheric surface layer
J.E. Cermak, L.S. Cochran, R.D. Leffler (Fort Collins, USA) 505

Pedestrian level winds

Generic models for pedestrian-level winds in built-up regions
T. Stathopoulos, H. Wu (Montreal, Canada) 515
Evaluation of pedestrian-level wind environment around a row of tall buildings using a quartile-level wind speed descripter
A.P. To, K.M. Lam (Hong Kong, Hong Kong) 527

Atmospheric dispersion

Building downwash of plumes and plume interactions
J.C.K. Cheung, W.H. Melbourne (Clayton, Australia) 543
Effects of model scale in estimating pollutant dispersion near buildings
P.J. Saathoff, T. Stathopoulos, M. Dobrescu (Montreal, Canada) 549

Other topics

Measurement of the Reynolds stress structure behind multiple windbreaks across-wind
B.-S. Shiau (Keelung, Taiwan) 561

[1] Keynote/Invited paper.

Investigation of the flow field and the starting conditions of wind-induced erosion of the railway embankment
J. Zhang, E. Cui, G. Fu (Beijing, China) 573
Drag reduction of trucks through boundary-layer control
V.J. Modi, S.St. Hill (Vancouver, Canada), T. Yokomizo (Yokohama, Japan) 583
Comparative study of the storm surge models proposed for Bangladesh: Last developments and research needs
J.A. As-Salek, T. Yasuda (Gifu, Japan) 595
Full-scale measurements of the effect of a porous windbreak on wind spectra
G.M. Richardson (Bedford, UK), P.J. Richards (Auckland, New Zealand) .. 611
Wind environment over the helideck of an offshore platform
Q. Chen, Z. Gu, T. Sun (Beijing, China), S. Song (Tianjing, China) 621
A study of the unfavorable effects of wind on the cooling efficiency of dry cooling towers
Q. Wei, B. Zhang, K. Liu, X. Du, X. Meng (Beijing, China) 633
Basic study on blockage effects in turbulent boundary layer flows
M. Noda, H. Utsunomiya, F. Nagao (Tokushima, Japan) 645
How can we simplify and generalize wind loads?[1]
A.G. Davenport (London, Canada) 657

List of papers presented at the Symposium 671
Author index 54, 55 (1995) 681

[1] Keynote/Invited paper.